REMARKS

In the Non-Final Office Action of November 18, 2005, claims 1-20 are pending. Claims 1 and 14-15 are independent claims from which all other claims depend therefrom. Claims 1, 3, 10-11, and 14-15 are herein amended. Claims 6 and 9 are herein canceled. Claims 21-22 are newly added.

The Office Action states that claims 11, 17, and 19 stand rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. Specifically, the Office Action states that the term "approximately" is relative and causes the claims to be indefinite. Applicant, respectfully, traverses and submits that the present application does provide a standard for ascertaining the requisite degree and one skilled in the art would be reasonably apprised of the scope of the invention. Note that claim 11 is herein amended to remove the term approximately.

With respect to claims 17 and 19, Applicant submits that the claimed term would not deceive an artisan as to discerning what is or what is not encompassed by the claimed invention. The art tolerates a limited sense of relativeness of ranges or terms, example, for manufacturing tolerances. Also, referring to MPEP 2173.02, some latitude in the manner of expression and the aptness of terms should be permitted even though the claim language is not as precise as the Examiner might desire.

With respect to claim 17, one skilled in the art when reading the present application as a whole would that the term "approximately equal to zero" refers to a speed that is nearly zero. Also, it would be clear that the speed is close enough to zero such that air intake at that speed would not cause the noise and vibration that is commonly associated with traditional electronic throttle control systems during engine shutdown. See the background section of the present application.

Also, with respect to claim 19, it would be clear to one skilled in the art that, for example, the "approximately 1.5°" reference refers at a minimum to

an angle greater than 0° and less than or equal to 2°. The present application states that the throttled controlled device is placed in a shutdown position that is more air restrictive than a throttle-controlled device default position, such as that of 7-8°. One skilled in the art would know that a typical throttle-controlled device has a normal idle operating range between 2-7°. Also, the present application states that the throttle-controlled device when in the shutdown position is not closed, as this would cause exhaust gases to undesirably enter an intake manifold. See also below arguments with respect to claims 11 and 19. Thus, the claim terms of claims 17 and 19 set out and circumscribe a particular subject matter with a reasonable degree of clarity and particularity. A person of ordinary skill in the art would be able to interpret the metes and bounds of the claims.

The Office Action states that claims 1-4, 8-9, and 13-16 stand rejected under 35 U.S.C. 102(e) as being anticipated by Boggs et al. (U.S. Pub. No. 2002/0165660).

Amended claim 1 recites a vehicle shutdown system for a non-hybrid vehicle that has an internal combustion engine. The system includes an ignition-enabling device and a non-hybrid internal combustion engine controller. The ignition-enabling device enables ignition of the internal combustion engine and has an ON state and an OFF state. The controller has multiple functions and at least temporarily maintains operation of a portion of the controller functions when the ignition-enabling device is switched to the OFF state.

Boggs discloses a method of shutting down an engine for a hybrid electric vehicle. In Boggs a routine is provided for the continuous activation and deactivation of an internal combustion engine during a drive cycle. A drive cycle of a hybrid electric vehicle can include the repetitive activation and deactivation of an internal combustion engine. This repetitive nature occurs while the vehicle is in operation. The fuel injectors, vapor management system, and exhaust gas recirculation valves during shutdown of the internal combustion engine can be flowing at different rates. This

contributes to fuel vapor and puddle amounts or varying amounts of residual fuel in the intake manifold, which can vary from one engine shutdown to the next. Because of the many shutdowns and starts, it becomes important to minimize the amount of tail pipe emissions.

In the drive cycle of a non-hybrid internal combustion vehicle the engine is started and shutdown once. A traditional internal combustion vehicle does not experience the repetitive on and off engine cycling of a hybrid vehicle and thus does not have the associated and above-described tail pipe emission issues.

Claim 1 is herein amended to clarify that it is directed to a non-hybrid vehicle and thus the controller thereof is different than that of a hybrid vehicle. Boggs fails to disclose a non-hybrid internal combustion engine controller and thus fails to disclose each and every element of claim 1. Applicants also submit that it would not have been obvious to utilize the control method of Boggs in a vehicle shutdown system for a non-hybrid vehicle since the motivation to do so is lacking. See below arguments with respect to claim 14.

Amended claim 14 also recites a vehicle shutdown system. The system includes an ignition-enabling device, a non-idle air valve throttle-controlled device, and a controller. The ignition-enabling device has an ON state and an OFF state. The controller temporarily prevents the shutdown of electronic throttle control when the ignition-enabling device is switched to the OFF state. The controller adjusts the throttle-controlled device to be at a position, without closing off the flow of air, that is more air flow restrictive than that of the throttle-controlled device in a default position when the ignition-enabling device is switched to the OFF state.

The system of claim 14 by increasing air flow restriction above that normally provided when the throttle-controlled device is in a default position reduces the amount of air received by an intake manifold during engine shutdown. This increased restriction reduces noise and vibration during shutdown and prevents exhaust gases from entering the intake manifold. The

flow of exhaust gases into the intake manifold can cause a rough or difficult engine start.

The purpose of the method of Boggs is to reduce emissions during engine startup. This is accomplished by reducing the amount of fuel vapor existing in an intake after engine shutdown. There is no suggestion or teaching anywhere in Boggs for the novel throttle control as claimed. Although Boggs appears to allow power to be sustained to an electronic throttle control during engine shutdown, there is no mention of the increased air restriction claimed.

Amended claim 15 recites a method of powering down a vehicle having a controller with a plurality of functions. The method includes temporarily maintaining operation of a portion of the controller functions when the ignition-enabling device is switched to the OFF state. The functions are selected from a camshaft position function, a crankshaft position function, and a remote start function.

The Office Action states that Boggs discloses the maintaining of electronic throttle control and ignition system functions after an ignition-enabling device is switched off. Regardless of whether this is true, Applicant submits that Boggs fails to teach or suggest the maintaining of a camshaft position function, a crankshaft position function, and a remote start function after an ignition-enabling device is switched off.

In order for a reference to anticipate a claim the reference must teach or suggest each and every element of that claim, see MPEP 2131 and *Verdegaal Bros. V. Union Oil Co. of California*, 814 F.2d 628. Thus, since Boggs fails to teach or suggest each and every element of claims 1 and 14-15, they are novel, nonobvious, and are in a condition for allowance at least in view of Boggs. Also, since claims 2-4, 8-9, 13, and 16 depend from claims 1 and 14-15, respectively, they too are also novel, nonobvious, and allowable for at least the same reasons.

Claims 5-7, 15, and 20 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Boggs and Page et al. (U.S. Pat. No. 6,499,455).

Applicant submits that since claims 5-7 and 20 depend from claims 1 and 15, that they are novel, nonobvious, and are in a condition for allowance for at least the above-stated reasons.

Also, there is no suggestion or motivation provided in Boggs or Page for the combination and modification thereof to arrive at the claimed invention. Boggs is directed to a hybrid electric vehicle system, which has different drive cycle characteristics than that of a non-hybrid internal combustion engine vehicle. Also, claim 1 recites the limitation of said controller functions comprising non-air valve related functions, whereas Page only discloses air valve related functions. Thus, the controller claimed is different than the microprocessor 62 of Page.

With respect to claim 7, the Office Action states that Boggs fails to teach or suggest a throttle position sensor. Applicant agrees. The Office Action states that Page discloses a sensor that is read by a circuit 78, which causes the air control valve to be maintained in an open position and refers to col. 4, lines 32-50 of Page for such reliance. Applicant submits that item 78 of Page is a timer chip. The timer chip 78 is used to sense the transition in voltage when an ignition switch is closed. Sensing the closure of an ignition switch is unrelated to the position of a throttle-controlled device, such as a throttle plate. The timer chip does not sense the state of the idle air valve 42 or of the throttle plate 36. The control of an idle air valve based on some other sensed parameter does not imply that the state of the valve is sensed that it is in anyway related to the state of the valve. The timer chip 78 is not a throttle position sensor nor would it have been obvious, as suggested by the Office Action, to incorporate a throttle position sensor into the system of Boggs, especially in view of Page. Besides the combination of an ignition switch sensor or of a throttle position sensor with the system of Boggs would not allow one to arrive at the claimed invention.

With respect to claim 15, the Office Action is silent. Nevertheless, Applicant submits that the claimed functions are not taught or suggested by either Boggs or Page. Referring to MPEP 706.02(j) and 2143, to establish a

prima facie case of obviousness the prior art reference(s) must teach or suggest all the claim limitations, see *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). Thus, claim 15 is also novel, nonobvious, and is in a condition for allowance.

Claims 10-11 and 17-19 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Boggs and Page and Applicant's admitted prior art.

Since claims 10-11 and 17-19 depend from claim 1 and 15, respectively, they too are novel, nonobvious, and are in a condition for allowance for at least the same reasons.

The Office Action states that Page discloses the maintaining of an air valve in an open state for a predetermined amount of time after engine shutdown, after which time the valve closes. The Office Action states that the closing of the air valve is more air restrictive than in the ignition-enabling ON state with a throttle plate default position of 7-8°. Although the closing of the air valve may be more air restrictive than when the throttle plate is at a default position of 7-8° and the air valve is in an open state, this is irrelevant and improper for multiple reasons.

It is improper to combine the default position mentioned in the background section of the present application with the system of Page. The idle air valve 42 of Page serves the purpose of a throttle plate of an engine, which does not have such a valve, when operating at idle. The idle air valve 42 is used to maintain a certain amount of air flow when the corresponding vehicle is operating at idle and the throttle plate is closed. In an engine that does not have the stated idle air valve the throttle plate position is controlled within an open range of between 2-7° to maintain the engine operating at idle when the accelerated is not depressed. The operating state of the idle air valve is likewise controlled to provide a similar amount of air flow as that provided by the stated and controlled throttle plate position of 2-7°. The controlled throttle plate based system and the idle air valve based system incorporate the stated techniques to prevent an engine from stalling when the accelerator is not depressed during vehicle operation and/or to allow the

vehicle to move forward at a low rate of speed. Thus, the throttle plate 36 of Page does not have a default position and it would be improper to suggest a combination that would assert otherwise. Notice that Page is silent with respect to any default position for the throttle plate 36. This is because the system of Page does not need such a default position.

In addition, note that the 7-8° default position referred to in the background section of the present application is associated with a high idle position. The high idle position allows a vehicle operator to proceed to a destination when the electronic throttle is inoperable. This has nothing to do with when a vehicle is shutdown or operates in a normal idle mode. The 7-8° position is not used in normal modes of vehicle idle operation.

Also, note that in Page the idle air valve 42 is remained opened after shutdown has been initiated or in other words the system of Page provides the same or greater amount of air flow at shutdown then when operating in an idle state. Thus, Page does not suggest a more restrictive air flow at shutdown.

Furthermore, the closing of an idle air valve after a predetermined amount of time is not the same as that claimed. Claim 10 is herein amended to recite that the increase in air restriction is not due to the closing of the throttle-controlled device.

Therefore, it would not have been obvious to combine Boggs and Page and the stated default position referred to in the background section of the present invention to arrive at the claimed invention. Also, such a combination would not allow one to arrive at the claimed invention without modifications thereof. To perform such combination and modifications would be to use improper hindsight reconstruction in view of the present invention.

Moreover, the claimed invention provides air flow in an intake manifold after shutdown without added complexity and increase in components associated with an idle air valve. The relied upon art in combination does not suggest the novel system claimed due to the incorporation of an idle air valve.

Thus, claim 10 is further novel and nonobvious for the stated reasons. Note that claim 14 has similar limitations as that of claim 10.

With respect to claims 11 and 19, the Office Action states that the adjustment of a throttle-controlled device to 1.5° is not inventive since it is within an optimum or workable range that would be discovered by routine experimentation. Applicant traverses. As stated, a system that does not use an idle air control valve, such as that referred to in the background section of the present application, does not reduce the throttle plate angle below the normal idle operating range of 2-7°. Although in Page the operating angle of the throttle plate 36 may be reduced to an angle below 2°, this is compensated by the opening of the idle air valve 42, which maintains the higher undesired air flow. Thus, the prior art did not recognize the advantages of positioning a throttle-controlled device at the claimed angle and thus such a workable angle (range) cannot be characterized as routine experimentation. See *In re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977).

Also, the claimed angle (range) is critical and achieves unexpected results. In general, a normal idle controlled operating position of a throttle plate is between 2-7° when an idle air valve is not used. The novel and intended shutdown position described within the present application is approximately 1.5° or 1-2°. This shutdown range in effect brakes and reduces the speed of the engine while at the same time preventing exhaust gases from entering the intake manifold and preventing the generation of noise and vibration due to a significant amount of air being compressed within the engine. A throttle-controlled position of less than 1° risks the flow of exhaust gases into the intake manifold. A throttle-controlled position of greater than 2° risks the generation of noise and vibration due to the large volume of air entering the intake manifold during shutdown. The prior art systems prevent operating a throttle-controlled device at an angle less than that associated with and do not recognize operating a throttle-controlled device in the stated normal idle operating range. The idle air valve of Page effectively provides

an equivalent amount of air and replaces operating of a throttle plate at a default position. Therefore, the claimed angle (range) is critical, has been unrecognized up until the present invention, and is not within a normal or traditional workable range of a system having a throttle plate and no idle air valve.

Thus, claims 11 and 19 are further novel and nonobvious for the above-stated reasons.

Claim 12 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Boggs and Bakholdin et al. (U.S. Pub. No. 2002/0157881).

Applicant submits that since claim 12 depends from claim 1, that it is also novel, nonobvious, and is in a condition for allowance for at least the same reasons.

As a side note and to clarify some of the embodiments described in the present application, the embodiments include a 7-8° default position for an inoperative throttle-controlled device and a 7-8° default position for an at rest or unactuated throttle-controlled device. The embodiments of the present invention also include the utilization of a controlled variable idle range, which may be between 2-7° during normal idle operation.

In light of the amendments and remarks, Applicant submits that all the rejections are now overcome. The Applicant has added no new matter to the application by these amendments. The application is now in condition for allowance and expeditious notice thereof is earnestly solicited. Should the Examiner have any questions or comments, he is respectfully requested to contact the undersigned attorney.

Respectfully submitted,

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